```
       FILE 'CAPLUS' ENTERED AT 20:47:38 ON 26 FEB 2003
L1            0 S GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?) AN
L2            3 S GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?)
L3            1 S GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?) AN

=> d l3 abs ibib kwic 1
```

L3   ANSWER 1 OF 1   CAPLUS   COPYRIGHT 2003 ACS

AB   The present invention relates to a progress for the isolation of a
       glycolipid enriched fraction from **rice bran**
       oil by subjecting crude **rice bran oil**
       to at least two steps of **dewaxing/degumming**, treating
       sludge obtained as a byproduct of the second **dewaxing/**
       degumming to **hexane** extn., and sepg. the
       glycolipid fraction. The glyolipid fraction so obtained can be
       further purified.

```
ACCESSION NUMBER:       2002:755248  CAPLUS
DOCUMENT NUMBER:        137:281022
TITLE:                  Process for the isolation of glycolipids
INVENTOR(S):            Vali, Shaik Ramjan; Chakrabarti, Pradosh Prasad;
                        Thengumpillil, Narayana Balagopala Kaimal
PATENT ASSIGNEE(S):     Council of Scientific & Industrial Research, India
SOURCE:                 U.S. Pat. Appl. Publ., 7 pp.
                        CODEN: USXXCO
DOCUMENT TYPE:          Patent
LANGUAGE:               English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002143173	A1	20021003	US 2001-820200	20010328

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PRIORITY APPLN. INFO.:                 US 2001-820200    20010328
TI     Process for the isolation of glycolipids
```

AB   The present invention relates to a progress for the isolation of a
       glycolipid enriched fraction from **rice bran**
       oil by subjecting crude **rice bran oil**
       to at least two steps of **dewaxing/degumming**, treating
       sludge obtained as a byproduct of the second **dewaxing/**
       degumming to **hexane** extn., and sepg. the
       glycolipid fraction. The glyolipid fraction so obtained can be
       further purified.

```
ST     glycolipid isolation rice bran oil
       degumming dewaxing hexane extn
IT     Extraction
           (process for the isolation of glycolipids)
IT     Glycolipids
       RL: PUR (Purification or recovery); PREP (Preparation)
           (process for the isolation of glycolipids)
IT     Fats and Glyceridic oils, processes
       RL: PEP (Physical, engineering or chemical process); PYP (Physical
       process); PROC (Process)
           (rice bran; process for the isolation of glycolipids)
IT     110-54-3, Hexane, uses
       RL: NUU (Other use, unclassified); USES (Uses)
           (extn. agent; process for the isolation of glycolipids)
```

Delacroix

09/820,200

=> s glycolipid? and rice(2a)bran(2a)oil? and (degum? or dewax?) and hexane(p)
extract?
(2A)OIL? IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s glycolipid? and rice(2a)bran(2a)oil and (degum? or dewax?) and hexane(p)
extract?
          14111 GLYCOLIPID?
          69980 RICE
          13849 BRAN
         644372 OIL
           1169 RICE(2A)BRAN(2A)OIL
           1900 DEGUM?
           5261 DEWAX?
          93087 HEXANE
         234575 EXTRACT?
           1804 HEXANE(P) EXTRACT?
L1   0 GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?) AND
                HEXANE(P) EXTRACT?

=> s glycolipid? and rice(2a)bran(2a)oil and (degum? or dewax?)
          14111 GLYCOLIPID?
          69980 RICE
          13849 BRAN
         644372 OIL
           1169 RICE(2A)BRAN(2A)OIL
           1900 DEGUM?
           5261 DEWAX?
L2   3 GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?)

=> d l2 abs ibib kwic 1-3

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L2   ANSWER 1 OF 3 CAPLUS COPYRIGHT 2003 ACS
AB   To remove phospho **glycolipids**, which is the resource of residual
      phosphorus in rice barn oils, the crude rice barn oil is treated with < 5%
      boiling water at room temp. to obtain purified oil after the sludge is
      sepd., followed by treating the purified oil with 0.5 - 10 % of reagent
      selected from mono-, di-, or triethanolamine to prep. refine rice oil with
      low phosphorus content (< 10 ppm); 10 % excessive reagent is used to
      neutralize the free fatty acid in the purified oil, followed by treating
      with 5 % boiling water again to obtain refining oil with < 0.5% free fatty
      acid, which is then bleached and deodorization to have rice oil with < 10
      ppm phosphorus and well retained micro-nutrients. Thus, crude rice barn
      oil (P: 358 ppm. free fatty acid: 7.98 %) was treated with 5 vol% boiling
      water and centrifuged to obtain clear oil, which was then treated with 3 %
      monoethanolamine and 5 vol % boiling water consequently to obtain the
      refining rice oil with Phosphorus content of 10.9 ppm and acid value of
      0.9.

ACCESSION NUMBER:	2002:808072 CAPLUS
DOCUMENT NUMBER:	137:312690
TITLE:	Preparation of low-phosphorus **rice bran oil** using **degumming** method
INVENTOR(S):	Thengumpillil, Narayana Balagopala Kaimal; Ongole, Rajamma; Potzla, Buhaska Sasha
PATENT ASSIGNEE(S):	Council of Scientific and Industrial Research, India
SOURCE:	Jpn. Kokai Tokkyo Koho, 15 pp. CODEN: JKXXAF
DOCUMENT TYPE:	Patent
LANGUAGE:	Japanese
FAMILY ACC. NUM. COUNT:	1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002309282	A2	20021023	JP 2001-101957	20010330
US 2002172741	A1	20021121	US 2001-820201	20010328

PRIORITY APPLN. INFO.:   JP 2001-101957   A 20010330

TI   Preparation of low-phosphorus **rice bran oil**
      using **degumming** method
AB   To remove phospho **glycolipids**, which is the resource of residual
      phosphorus in rice barn oils, the crude rice barn oil is treated with < 5%
      boiling water at room temp. to obtain purified oil after the sludge is
      sepd., followed by treating the purified oil with 0.5 - 10 % of reagent
      selected from mono-, di-, or triethanolamine to prep. refine rice oil with
      low phosphorus content (< 10 ppm); 10 % excessive reagent is used to
      neutralize the free fatty acid in the purified oil, followed by treating
      with 5 % boiling water again to obtain refining oil with < 0.5% free fatty
      acid, which is then bleached and deodorization to have rice oil with < 10
      ppm phosphorus and well retained micro-nutrients. Thus, crude rice barn
      oil (P: 358 ppm. free fatty acid: 7.98 %) was treated with 5 vol% boiling
      water and centrifuged to obtain clear oil, which was then treated with 3 %
      monoethanolamine and 5 vol % boiling water consequently to obtain the
      refining rice oil with Phosphorus content of 10.9 ppm and acid value of
      0.9.
ST   low phosphorus contained rice oil **degumming** boiling water
      ethanolamine
IT   Gums and Mucilages
          (prepn. of low-P rice barn oil by **degumming** method with
          amines and boiling water)

IT   Fats and Glyceridic oils, preparation
      RL: IMF (Industrial manufacture); PREP (Preparation)
         (rice bran; prepn. of low-P rice barn oil by **degumming** method
         with amines and boiling water)
IT   102-71-6, Triethanolamine, uses   111-42-2, Diethanolamine, uses
      141-43-5, Monoethanolamine, uses   7732-18-5, Water, uses
      RL: NUU (Other use, unclassified); USES (Uses)
         (prepn. of low-P rice barn oil by **degumming** method with
         amines and boiling water)

L2   ANSWER 2 OF 3 CAPLUS COPYRIGHT 2003 ACS
AB   The present invention relates to a progress for the isolation of a
      glycolipid enriched fraction from **rice bran
      oil** by subjecting crude **rice bran oil**
      to at least two steps of **dewaxing/degumming**, treating
      sludge obtained as a byproduct of the second **dewaxing/
      degumming** to hexane extn., and sepg. the **glycolipid**
      fraction. The glyolipid fraction so obtained can be further purified.
ACCESSION NUMBER: 2002:755248 CAPLUS
DOCUMENT NUMBER: 137:281022
TITLE: Process for the isolation of **glycolipids**
INVENTOR(S):   Vali, Shaik Ramjan; Chakrabarti, Pradosh Prasad;
                          Thengumpillil, Narayana Balagopala Kaimal
PATENT ASSIGNEE(S):   Council of Scientific & Industrial Research, India
SOURCE: U.S. Pat. Appl. Publ., 7 pp.
                          CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

        PATENT NO.   KIND DATE   APPLICATION NO. DATE
        --------------- ---- --------   --------------- --------
        US 2002143173   A1   20021003   US 2001-820200   20010328
PRIORITY APPLN. INFO.:   US 2001-820200   20010328
TI   Process for the isolation of **glycolipids**
AB   The present invention relates to a progress for the isolation of a
      glycolipid enriched fraction from **rice bran
      oil** by subjecting crude **rice bran oil**
      to at least two steps of **dewaxing/degumming**, treating
      sludge obtained as a byproduct of the second **dewaxing/
      degumming** to hexane extn., and sepg. the **glycolipid**
      fraction. The glyolipid fraction so obtained can be further purified.
ST   **glycolipid** isolation **rice bran oil**
      degumming dewaxing hexane extn
IT   Extraction
         (process for the isolation of **glycolipids**)
IT   **Glycolipids**
      RL: PUR (Purification or recovery); PREP (Preparation)
         (process for the isolation of **glycolipids**)
IT   Fats and Glyceridic oils, processes
      RL: PEP (Physical, engineering or chemical process); PYP (Physical
      process); PROC (Process)
         (rice bran; process for the isolation of **glycolipids**)
IT   110-54-3, Hexane, uses
      RL: NUU (Other use, unclassified); USES (Uses)
         (extn. agent; process for the isolation of **glycolipids**)

L2   ANSWER 3 OF 3   CAPLUS   COPYRIGHT 2003 ACS

AB   **Rice bran oil**, not being a seed-derived oil,
      has a compn. qual. different from common vegetable oils and the
      conventional vegetable oil processing technologies are not adaptable
      without incurring huge losses. The oil's unusual high content of waxes,
      free fatty acids, unsaponifiable constituents, phospholipids,
      glycolipids and its dark color all cause difficulties in the
      refining process. An attempt was made in this investigation to look into
      factors that are responsible for such difficulties and to develop suitable
      methodologies for phys. refining of **rice bran
      oil**. Special attention was given to **dewaxing**,
      degumming and deacidification steps. The high content of
      glycolipids (.apprx.6%) present in the oil was found to be a
      central problem and their removal appeared crucial for successful
      processing of the oil. We have also isolated and identified, for the
      first time, phosphorus-contg. **glycolipids** that are unique to
      this oil. These compds. prevent a successful **degumming** of the
      oil and their high surface activity leads to unusually high refining
      losses during alkali refining. A no. of simple processes has been
      evolved, including 1) a simultaneous **dewaxing** and
      degumming process, 2) an unusual enzymic process to **degum**
      the oil, 3) processes for the removal of the **glycolipids**
      including the phosphoglycolipids and 4) a process for the isolation of the
      glycolipids which may have potential applications in the food,
      cosmetic and pharmaceutical industries. The processing protocol suggested
      here becomes the first and only one to produce an oil with less than 5 ppm
      of phosphorus from crude **rice bran oil**,
      rendering it thus suitable for phys. refining. We believe that the
      present results are very significant and should contribute to a better
      utilization of this valuable oil.

TI   Origin of problems encountered in **rice bran
      oil** processing

AB   **Rice bran oil**, not being a seed-derived oil,
      has a compn. qual. different from common vegetable oils and the
      conventional vegetable oil processing technologies are not adaptable
      without incurring huge losses. The oil's unusual high content of waxes,
      free fatty acids, unsaponifiable constituents, phospholipids,
      glycolipids and its dark color all cause difficulties in the

refining process. An attempt was made in this investigation to look into factors that are responsible for such difficulties and to develop suitable methodologies for phys. refining of **rice bran oil**. Special attention was given to **dewaxing**, **degumming** and deacidification steps. The high content of **glycolipids** (.apprx.6%) present in the oil was found to be a central problem and their removal appeared crucial for successful processing of the oil. We have also isolated and identified, for the first time, phosphorus-contg. **glycolipids** that are unique to this oil. These compds. prevent a successful **degumming** of the oil and their high surface activity leads to unusually high refining losses during alkali refining. A no. of simple processes has been evolved, including 1) a simultaneous **dewaxing** and **degumming** process, 2) an unusual enzymic process to **degum** the oil, 3) processes for the removal of the **glycolipids** including the phosphoglycolipids and 4) a process for the isolation of the **glycolipids** which may have potential applications in the food, cosmetic and pharmaceutical industries. The processing protocol suggested here becomes the first and only one to produce an oil with less than 5 ppm of phosphorus from crude **rice bran oil**, rendering it thus suitable for phys. refining. We believe that the present results are very significant and should contribute to a better utilization of this valuable oil.

ST **rice bran oil** refining **glycolipid** phospholipid removal

IT Food processing
Food viscosity
Surfactants
 (origin of problems encountered in **rice bran oil** processing)

IT **Glycolipids**
RL: ADV (Adverse effect, including toxicity); BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
 (origin of problems encountered in **rice bran oil** processing)

IT Fatty acids, biological studies
RL: BSU (Biological study, unclassified); BIOL (Biological study)
 (origin of problems encountered in **rice bran oil** processing)

IT Carboxylic acids, biological studies
Phospholipids, biological studies
Waxes
RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL (Biological study); PROC (Process)
 (origin of problems encountered in **rice bran oil** processing)

IT Fats and Glyceridic oils, biological studies
RL: FFD (Food or feed use); PEP (Physical, engineering or chemical process); PYP (Physical process); BIOL (Biological study); PROC (Process); USES (Uses)
 (rice bran; origin of problems encountered in **rice bran oil** processing)

IT 135371-38-9, Lipase G
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)
 (origin of problems encountered in **rice bran oil** processing)

IT 77-92-9, Citric acid, biological studies   87-69-4, Tartaric acid,

biological studies   102-71-6, Triethanolamine, biological studies
108-24-7, Acetic anhydride   111-42-2, Diethanolamine, biological studies
141-43-5, Ethanolamine, biological studies   144-62-7, Oxalic acid,
biological studies   7664-38-2, Phosphoric acid, biological studies
RL: FFD (Food or feed use); PEP (Physical, engineering or chemical
process); PYP (Physical process); BIOL (Biological study); PROC (Process);
USES (Uses)
    (origin of problems encountered in **rice bran
oil** processing)

=> d his

    (FILE 'HOME' ENTERED AT 20:47:33 ON 26 FEB 2003)

    FILE 'CAPLUS' ENTERED AT 20:47:38 ON 26 FEB 2003
L1   0 S GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?) AN
L2   3 S GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?)

=> s glycolipid? and rice(2a)bran(2a)oil and (degum? or dewax?) and hexane and
extract?
      14111 GLYCOLIPID?
      69980 RICE
      13849 BRAN
    644372 OIL
       1169 RICE(2A)BRAN(2A)OIL
       1900 DEGUM?
       5261 DEWAX?
     93087 HEXANE
   234575 EXTRACT?
L3   1 GLYCOLIPID? AND RICE(2A)BRAN(2A)OIL AND (DEGUM? OR DEWAX?) AND
         HEXANE AND EXTRACT?